

# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY, ASSIGNOR TO THE  
EDISON ELECTRIC LIGHT COMPANY, OF NEW YORK, N. Y.

## FILAMENT FOR INCANDESCENT LAMPS.

SPECIFICATION forming part of Letters Patent No. 543,987, dated August 6, 1895.

Application filed October 20, 1882. Serial No. 74,786. (No specimens.)

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Incandescing Conductors for Electric Lamps, (Case No. 499,) of which the following is a specification.

This object of this invention is to produce in a simple and economical manner flexible carbon filaments which shall be homogeneous and of high resistance, and therefore well adapted for use as the incandescing conductors of electric lamps.

In my application, Case No. 498, Serial No. 74,785, I have set forth a process of producing from vegetable fiber a transparent, tough, flexible, and carbonizable substance. This substance I have found to be exceedingly well adapted to form after carbonization incandescing filaments possessing the properties above mentioned.

The process of forming the filaments consists in subjecting fibrous vegetable material of any kind to the action of hydrofluoric acid, the resulting substance being carbonized, and the filaments of the desired shape being formed from said material either before or after carbonization.

Filaments may be formed from the original fibrous material, which may be paper, wood, bamboo, cotton, flax, or any vegetable substance, such filaments being treated with the acid and then carbonized in the usual manner.

Sheets, sticks, or blocks of the fibrous vegetable substance may be treated with the acid, and the filaments cut or punched from

them either before or after carbonization; or masses of the material used may be completely dissolved by the acid, the resultant jelly-like mass being then pressed into sheets and the filaments formed from these sheets. The acid will be sufficiently removed from the mass by the pressure, the small quantity which remains gradually evaporating and distilling off.

What I claim is—

1. A flexible filament of carbon for the incandescing conductor of an electric lamp, formed from vegetable fiber, treated before carbonization with hydrofluoric acid, substantially as set forth.

2. The process of forming flexible carbon filaments for the incandescing conductors of electric lamps, consisting in treating vegetable fiber with hydrofluoric acid and carbonizing the resulting material, such material being formed into filaments either before or after carbonization, substantially as set forth.

3. The process of forming flexible carbon filaments for the incandescing conductors of electric lamps, consisting in dissolving vegetable fiber by hydrofluoric acid, and pressing the resulting material into sheets, from which sheets the filaments are formed either before or after carbonization, substantially as set forth.

This specification signed and witnessed this 17th day of October, 1882.

THOS. A. EDISON.

Witnesses:

H. W. SEELY,

RICHD. N. DYER.